NSCI 586
Contemporary Topics in K-12 STEM Education
Rice Elementary Model STEM Lab (REMSL)
Rice University Office of STEM Engagement

Syllabus

Fall 2020 – Spring 2021

Instructors

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Required Text (provided)

Keeley, P. (2008). Science Formative Assessment 75 Practical Strategies for Linking Assessment, Instruction, and Learning. Thousand Oaks, CA: NSTA and Corwin Press.

Walsh, J.A. & Sattes, B.D. (2005). Quality Questioning: Research-Based Practice to Engage Every Learner. Thousand Oaks, CA: AEL and Corwin Press.

Additional readings will be supplied electronically

Summary of Program

The Rice Elementary Model STEM Labs (REMSL) program is designed to service 3rd, 4th, and 5th grade science, science and math, or self-contained teachers. The purpose of the program is to increase the content knowledge of educators and to empower them in implementing rigorous, inquiry-based, student-centered science and mathematics. We will accomplish this goal through the mastery of science and mathematics content and the exploration of the most effectively proven "best practices" in educational pedagogy.

This year, all classes will be taught remotely. The course is a student-centered, inquiry-oriented community of learners. ***Every teacher participant is expected to engage in active discussion and analysis while maintaining a level of professionalism with their peers and the instructional staff. This requires that every teacher participant complete and critically analyze readings, as well as evaluate their classroom practices.***

Course Objectives

1. To think reflectively and critically about current teacher practice.
2. To improve elementary school teachers' understanding of science and mathematics content and state standards.
3. To facilitate the transformation of teacher practice through the exploration of best practices in educational pedagogy.
4. To improve elementary STEM education on each campus through the development of teacher leaders.
5. To support REMSL participants in the application of improved science and mathematics instruction.

Course Expectations

The stipend amount and grade received is based on the completion of all components of the REMSL AM/PM program:

1. Attendance
2. Pre and Post Tests/Surveys
3. Student Surveys
4. T.E.A.M.S Observations (2)
5. Assignments
6. Forum Discussions/Participation
7. Completion and Presentation of the End of Course Portfolio

Please Note: Final stipends are requested until after post-surveys have been received. Delay in submitting your post surveys delays the request of stipend. Once stipends request have been submitted, it may take 2-6 weeks for checks to be processed to the remittance address added on the vendor portal site. If at any time you have an address change you must notify R-STEM operations staff at stem@rice.edu and complete a new W-9 and resubmit via vendor portal system.

Also please note that stipends can be delayed for the following reasons:

- ***No W-9 submitted to Vendor Portal System***
- ***No address added to Remittance Address in Vendor Portal System***
- ***Delay in returning Post Surveys***
- ***Change of address***
- ***Name change***

Attendance

You are expected to attend all class sessions. ***REMSL participants may miss no more than 4 class sessions per year.*** If a conflict arises, please contact one of the instructors.

Portfolio sessions at the end of the year (last two class dates for both AM and PM) are mandatory and required in order to receive your certificate of completion and stipend.

Surveys

Participants are required to complete pre-tests and post-tests during the course of the program as well as course evaluation surveys. ***Participants must complete these tests/surveys in order to receive their stipend.*** *Final grades are released upon completion.*

Grades

Students who enroll in the class are required to complete all homework assignments and participate fully in the course. Grades are calculated:

10% REMSL assignments and homework
25% labs and in-class participation
40% final project (portfolio)

25% completion of required tests and surveys

Assignments

Assignments are designed to reflect and apply the knowledge gained in class. They are also devised to monitor the lesson outcomes for both students and teacher in the teachers' classrooms. While completing readings, notes or annotations are a must, so that you will have material to facilitate discussion every week. ***If a component of the program is not completed (such as not attending required sessions or not fully participating in the professional development portion), the participant will not receive the full amount of the stipend.*** Any participant with special needs or concerns is requested to speak with one of the instructors as soon as possible. All discussions will remain confidential.

T.E.A.M.S. Observations

T.E.A.M.S (Teachers Engaged In Authentic Mentoring Strategies) is an on campus support program that places participating teachers in a partnership with another teacher on their campus dedicated to the study of teaching practice. T.E.A.M.S partnerships will conduct a series of two (2) observation cycles designed to provide the participating teacher with useful information about their own classroom. The REMSL intern will observe a teacher within their REMSL PLC or within their school building concerning a specific teaching target (ex. Wait Time, Quality Questioning) and the teacher will in turn observe the REMSL participant modeling the same target. Both the REMSL intern, and the participating teacher will write a brief overview of what was observed concerning the given target and submit it to the REMSL instructors at the assigned time.

End of Course Portfolio

Over the course of the program, participants are required to develop a portfolio of work demonstrating the growth they have achieved since participating in the program. The portfolio will be collected and submitted electronically. The REMSL staff and trainers will work with participants to assist in completing the components, as well as collecting and maintaining the documents throughout the year. However, it is the ultimate responsibility of the participant to complete and submit all parts of the portfolio in order to complete the course.

The portfolio includes three parts:

- STEM Content Component
- Pedagogy Component
- Leadership Component

All portfolios will begin with the following information:

- Title page (including participant name, date, program name, school name)
- Table of contents
- Two letters of recommendation that focus specifically on your skills and ability as a teacher and leader

Your portfolio will be presented to the class electronically at the end of the REMSL program.

Title IX

Rice University cares about your wellbeing and safety. Rice encourages any student who has experienced an incident of harassment, pregnancy discrimination or gender discrimination or relationship, sexual, or other forms interpersonal violence to seek support from The SAFE Office.

At Rice University, unlawful discrimination in any form, including sexual misconduct, is prohibited under Rice Policy on Harassment and Sexual Harassment (Policy 830) and the Student Code of Conduct. As the instructor and a responsible employee, I am **required** by Title IX to disclose all incidents of non-consensual interpersonal behaviors to the Title IX Coordinator on campus. Although responsible employees are required to make this notification, it is

the student's choice to pursue a formal complaint. The goal is to make sure that students are aware of the range of options available and have access to the resources when in need. For more information, please visit safe.rice.edu, titleixrice.edu, or email titleixsupport@rice.edu.

Disability Statement

Any student with a documented disability needing academic adjustments or accommodations should speak with me during the first day of class after class or during office hours. All discussions will remain confidential. I will try to make whatever accommodations are necessary. You will also need to contact Disability Support Services in the Ley Student Center to register. (http://students.rice.edu/students/Disability.asp)

Honor Code

Established in 1912, the Honor Code is one of the most distinct aspects of the academic experience at Rice. Everyone who enrolls at Rice agrees to abide by the code, which covers such matters as plagiarism and giving or receiving aid on exams. Work completed under the Honor Code carries the pledge cited below followed by the student's signature. The Honor Code fosters a spirit of freedom, independence, honesty and mutual trust that exemplifies the academic enterprise at its best. In most courses, students are able to schedule final exams when they want them, rather than having two exams on the same day or three or four in a row. In many cases, exams may be taken in the library or in the students' rooms. Exams for large classes are scheduled for specific times, but even those are not proctored. The student-elected Honor Council oversees the Honor Code and considers reported violations.

"On my honor, I have neither given nor received any unauthorized aid on this (exam, quiz, paper)."

REMSL Summer Institute

Session I: July 20 – July 24 @ Spring Branch Science Center, Spring Branch ISD

DAY	DATE	CONTENT	PEDAGOGY/LEADERSHIP
	July 20	REMSL Pre-testing	
Monday	July 20	Ice Balloons States of Matter TEKS 5.2A-D, 3.5B, 3.5C What is Inquiry?	Prepared Environment Science Lab Management and Safety Science Notebooks
Tuesday	July 21	Classification of Matter TEKS 5.5A, 4.5A, 3.5A	REMSL Overview Syllabus/T.E.A.M.S/Portfolios Vocabulary In Context

Wednesday	July 22	Mixtures TEKS 5.5B, 3.5D	Reading and Writing Strategies in Science PLC's
Thursday	July 23	Forms of Energy TEKS 5.6A, 4.6A, 3.6A	Rigor and Relevance/Quality Questioning Math/Science Connections
Friday	July 24	Field Experience to Rice University	

Fall and Spring Semesters – REMSL AM (*14 sessions)*

8:00 am – 3:30 pm *Thursday @ Spring Branch Science Center, Spring Branch ISD*

WK	DATE (TH)	CONTENT	PEDAGOGY/LEADERSHIP/CONTENT
1	September 10	Force and Motion TEKS 5.6D, 4.6D, 3.6C	Light TEKS 5.6C
2	September 17	Circuits TEKS 5.6B, 4.6C	***Physical Science STEM Design Challenge***
3	September 24	Patterns of Change TEKS 5.8C, 4.8C	Making Inferences in Science TEAMS I Prep
	September 28- October 2	TEAMS I **(No weekly class sessions)**	
4	October 8	Solar System TEKS 3.8D Sun, Earth, Moon System TEKS 5.8D, 3.8C	Assessments and Rubrics Writing Quality Test Questions
5	October 15	Weather and Climate TEKS 5.8A, 4.8A, 3.8A	Data Analysis/Intervention ***Space Science STEM Design Challenge***
6	October 22	Soil TEKS 4.7A, 3.7A	Changes to Land TEKS 5.7B, 4.7B, 3.7B
		Field Experience Ocean Star	
	October 26 - November 6	**No weekly class sessions/CAST Conference 11/4-11/7**	
7	November 12	Renewable/Nonrenewable 4.7C Fossil Fuels/Sedimentary Rocks TEKS 5.7A	Science Nights/STEM Expos ***Earth Science STEM Design Challenge***
8	November 19	Ecosystems TEKS 5.9A, 3.9A	Science and Art TEAMS II Prep
	November 23 - November 27	Thanksgiving Break **(No weekly class sessions)**	
	November 30 - January 1	REMSL Winter Break/TEAMS II **(No weekly class sessions)**	
9	January 7	Flow of Energy TEKS 5.9B, 4.9B, 3.9B Environmental Changes TEKS 5.9C, 3.9C	QR Codes and Augmented Reality Special Populations TOL
10	January 14	Cycles in Ecosystems TEKS 5.8B, 4.8B, 4.9A, 5.9A, 3.9B	Outdoor Learning Environments Science Games
11	January 21	Structures and Functions TEKS 5.10A, 4.10A, 3.10A	Global Education
12	January 28	Traits and Behaviors TEKS 5.10B, 4.10B Life Cycles/Plant and Animals 4.10C, 3.10B	***Life Science STEM Design Challenge***
	February 1 - March 1	REMSL Spring Break **(No weekly class sessions)**	
13	March 4	*REMSL Post Testing/Intern Portfolio Presentations	
14	March 11	Intern Portfolio Presentations	

Fall and Spring Semesters – REMSL PM *(20 sessions)*

4:30 pm – 7:30 pm; *Tuesday @ Zotz Education Center, Galena Park ISD*
4:30 pm –7:30 pm*; Thursday @ Spring Branch Science Center, Spring Branch ISD*

WK	DATE (T,TH)	CONTENT	PEDAGOGY/LEADERSHIP/CONTENT
1	September 8/10	Force and Motion TEKS 5.6D, 4.6D, 3.6C	Light TEKS 5.6C
2	September 15/17	Circuits TEKS 5.6B, 4.6C	
3	September 22/24	***Physical Science STEM Design Challenge***	
	September 28-October 2	TEAMS I **(No weekly class session)**	
4	October 6/8	Patterns of Change TEKS 5.8C, 4.8C	Making Inferences in Science TEAMS I Prep
5	October 13/15	Solar System TEKS 3.8D Sun, Earth, Moon System TEKS 5.8D, 3.8C	Assessments and Rubrics
6	October 20/22	Weather and Climate TEKS 5.8A, 4.8A, 3.8A	Data Analysis/Intervention Strategy
		Field Experience - Ocean Star	
	October 26 - November 6	**No weekly class sessions/CAST Conference 11/4-11/7**	
7	November 10/12	***Space Science STEM Design Challenge***	
8	November 17/19	Soil TEKS 4.7A, 3.7A	Changes to Land TEKS 5.7B, 4.7B, 3.7B
	November 23 - November 27	Thanksgiving Break (No weekly class sessions)	
9	December 1/3	Renewable/Nonrenewable TEKS 4.7C Fossil Fuels/Sedimentary Rocks TEKS 5.7A, 5.9D	Science Nights/STEM Expos
10	December 8/10	***Earth Science STEM Design Challenge/TEAMS II Prep***	
	December 14 to January 1	REMSL Winter Break/TEAMS II (no weekly class session)	
11	January 5/7	Ecosystems TEKS 5.9A, 3.9A	TEAMS II Reflection/TOL
12	January 12/14	Flow of Energy TEKS 5.9B, 4.9B, 3.9B Environmental Changes TEKS 5.9C, 3.9C	QR Codes and Augmented Reality
13	January 19/21	Cycles in Ecosystems TEKS 5.8B, 4.9B, 4.9A, 5.9A, 3.9B	Outdoor Learning Environments
14	January 26/28	Structures and Functions TEKS 5.10A, 4.10A, 3.10A	Global Education
15	February 2/4	Traits and Behaviors TEKS 5.10B, 4.10B Life Cycles/Plants and Animals TEKS 4.10C, 3.10B	Science Games
16	February 9/11	***Life Science STEM Design Challenge***	
17	February 16/18	Science and Art	
18	February 23/25	*REMSL Post Testing	
19	March 2/4	Intern Portfolio Presentations	
20	March 9/11	Intern Portfolio Presentations	